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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/520,686	03/07/2000	Bryan Hubbard	VLSI-3234	9095

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EXAMINER

WACHSMAN, HAL D

ART UNIT PAPER NUMBER

2857

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/520,686

Applicant(s)

HUBBARD ET AL.

Examiner

Hal D Wachsmen

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 12-14 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 9-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10-9-01
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. Applicant's election without traverse of Group (species) I in the reply filed 3-31-04 is acknowledged. The Examiner notes that non-elected claims 15-22 have been cancelled by the Applicant.
2. The drawings are approved.
3. The Examiner respectfully notes the following grammatical errors in the specification: page 6, lines 10-11, and page 29, line 28 "...provides a target design is immune.." (word "that" missing before "is").
4. Claims 2, 9-11 and 14 are objected to under 37 C.F.R. 1.75(a) for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Claim 2 cites "said extrema" however the antecedent basis is "at least one extrema". This same type of problem also occurs in claims 9 and 14. Claim 14 cites "said intensity of said return signal" which lacks clear antecedent basis. The examiner asks the applicant to better claim the limitations cited above. While the examiner understands the intentions of the applicant he feels confusion could be drawn from the limitations cited above. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 12-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claim 12 is a hybrid claim, that is a single claim which claims both an apparatus and the method steps of using the apparatus (see Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990). Claim 12 first sets forth "A stepper for aligning a wafer, said stepper comprising:" followed by apparatus limitations (i.e. "a processor", "a computer readable memory..."). However, then in lines 5-6 a method for determining a centroid of a target set in a wafer is being referred to followed by the steps of this method in lines 7 to the end. In addition, although the preamble refers to a stepper for aligning a wafer, the body of this claim does not clearly set forth how this alignment is finally achieved.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 12-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. As already shown above in paragraph 6, claim 12 is a hybrid claim, and thus is directed to neither a "process" nor a "machine", but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which was drafted so as to set forth the statutory classes of invention in the alternative only.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 4, 5, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sekiguchi et al. (see translation of JP 05-013306).

As per claim 1, Sekiguchi et al. (Abstract, drawings 1, 3 and 6, paragraphs 0002, 0026, 0038, 0039) disclose "receiving said wafer, said wafer having said target set....including a plurality of target shapes separated by a material". Sekiguchi et al. (Abstract, paragraphs 0014, 0015, 0020) disclose "passing a signal over said plurality of target shapes and over said material of said target set". Sekiguchi et al. (Abstract, paragraphs 0006, 0017, 0030, 0033) disclose "receiving a return signal that is reflectedmaterial separating said plurality of target shapes within said target set". Sekiguchi et al. (Abstract, paragraphs 0020, 0021, 0032) disclose "identifying a location of each of at least one extrema of said return signal... separating said plurality of target shapes within said target set". Sekiguchi et al. (Abstract, paragraphs 0033-0035, 0039) disclose "determining said centroid of said target set from said at least one extrema of said return signal".

As per claim 2, Sekiguchi et al. (Abstract, drawings 2 and 4) disclose the feature of this claim.

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As per claim 4, Sekiguchi et al. (Abstract, drawings 2 and 4, paragraph 0021) disclose the feature of this claim.

As per claim 5, Sekiguchi et al. (see at least abstract) disclose the feature of this claim.

As per claim 12, Sekiguchi et al. (see drawing 7) disclose "a processor" and a computer readable memory coupled to the processor. As far as the program instructions for carrying out the steps of the method, these steps have already been addressed in the rejection of claim 1 above.

As per claim 14, Sekiguchi et al. (Abstract, drawings 2 and 4, paragraph 0021) disclose the feature of this claim.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 3, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (see translation of JP 05-013306).in view of Jang et al. (6,043,133).

As per claim 3, Jang et al. (col. 1 lines 43-46) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Jang et al. to the invention of Sekiguchi et al. as specified above because Sekiguchi et al. (see claim 1 of this reference) teach a mask with marks on a wafer and Jang et al. (col. 1 lines 40, 41, 43-45) teach that typically each alignment target comprises topographical **marks and that the alignment targets are used to diffract a laser alignment beam generated by a photolithography machine, commonly known as a **wafer stepper, during the masking process.****

As per claim 8, Jang et al. (col. 6 lines 15-17) teach that typically two alignment mark areas are on a wafer however often more are added for greater precision. Consequently, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Jang et al. to the invention of Sekiguchi et al. as specified above and have four rectangular target shapes instead of two rectangular target shapes because as shown above it would provide greater precision.

As per claim 13, Jang et al. (col. 1 lines 43-46) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Jang et al. to the invention of Sekiguchi et al. as specified above because Sekiguchi et al. (see claim 1 of this reference) teach a mask with marks on a wafer and Jang et al. (col. 1 lines 40, 41, 43-45) teach that typically each alignment target comprises topographical **marks** *and that the alignment targets are used to diffract a laser alignment beam generated by a photolithography machine, commonly known as a **wafer stepper, during the masking process.***

13. Claims 6, 7 and 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and subject to the appropriate correction of the 37 C.F.R. 1.75(a) objections noted in paragraph 4 above.

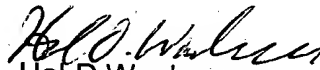
14. The following references are cited as being art of general interest: Watkins et al. which disclose aligning layers in an integrated circuit device, Fujino which disclose an apparatus for determining mark position and a wafer, Uzawa et al. which disclose an aligning method for a semiconductor device and Wei et al. which disclose the determination of the center of a pad on a wafer.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal D Wachsman whose telephone number is 571-272-2225. The examiner can normally be reached on Monday to Friday 7:00 A.M. to 4:30 P.M..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Hal D Wachsman
Primary Examiner
Art Unit 2857

HW
May 16, 2004